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LEICESTERSHIRE WOODLICE

by

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LEICESTERSHIRE WOODLICE

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ACKNOWLEDGMENT

This report is the culmination of four years field work and several months of ploughing through and computerising the last three decades of reports and record cards for this group of invertebrates in Leicestershire. Early in 1993 I applied for and received a grant from the Omer Cooper Fund, which is administered by the Linnean Society of London, to write this report. Without this generous funding I would have been unable to complete the field work so quickly and this report would not have been written.

INTRODUCTION

Woodlice are members of the order Isopoda (from Greek meaning equal feet) of the class Crustacea, which includes crabs, lobsters, water fleas and shrimps. They have seven pairs of legs, with the body divided into three sections - head, pereion and pleon.

The head is equipped with a pair of antennae, the last section (flagellum) of which is divided into several segments, with the number and shape differing between woodlice families. The eyes - which are set on the front corners of the head - can be of a single pair of ocelli, groups of three ocelli or compound. The species *Platyarthrus hoffmannseggi* is completely blind.

The pereion comprises seven large plates directly behind the head and to the underside of each is connected a pair of legs. In females a brood pouch is grown on the ventral surface of the pereion in which she carries the eggs until after they have hatched. Several days after hatching, the liquid in the brood pouch leaks away and the female finds a deep micro-site in which to abandon the young. This method of parental care reduces mortality of the young when they would be most vulnerable from predators and parasites.

The last five segments of the body make up the pleon to which the uropods and telson (tail) are connected. On the ventral surface are the genitalia, or pleopods, which in some species have either two or five white patches on their sides; these are a primitive type of lung.

RECORDING

There are four main sources for woodlice records in the county covering the last 35 years. They started when a few members of the Conchological Society - which used to hold an unofficial annual field meeting in Leicestershire - recorded woodlice as part of their surveys (Rundle 1960-1989). At the beginning of the 1980s Michael Evans began a survey of the distribution of woodlice in the county which combined his own fieldwork with the earlier records and culminated in an unpublished paper (Evans, 1982). In the late 1980s, Adrian Rundle undertook a survey to record several non-insect invertebrate groups, which included woodlice, on a 1x1km square basis for the whole of the area within the Leicester city boundary (Rundle, 1987-1990). As part of his survey he also visited many sites in the county. In 1990, as Rundle departed the scene, I returned to Leicestershire and began my own county-wide woodlice survey, which I hope to continue. There are also a few records from several archaeological digs that took place within the city of Leicester during the early 1990s, when five species of woodlice were identified from their mineralised remains (Boyer, 1990; Daws, 1993).

HABITATS

At present there are twenty species of woodlice recorded in Leicestershire from a variety of habitats. When surveying for this group there is a tendency to be biased toward sites that have easy public access and plenty of stones and pieces of wood to look beneath, such as churchyards, public open space (including country parks), wasteground and roadside verges. Despite this, both Rundle and myself have managed to arrange access to many city gardens, over a hundred dairy farms and stables, as well as quarries, private estates and local nature reserves.

Listed below are a few of the different habitats found in Leicestershire with an indication of the woodlouse fauna associated with them.

Churchyards

Within the county there are a number of habitats to be found in the grounds of churches varying from the open, dry limestone grassland churchyards of Rutland to the heavily shaded ones built on the volcanic rocks of Charnwood. Whatever the habitat, they usually provide an oasis for wildlife, safe from urban sprawl and rural plough. Seventeen species have been recorded from Leicestershire churchyards, including the only county site for *Armadillidium depressum*. Another species, *Porcellio spinicornis*, particularly associated with limestone-rich habitats, is often found on the mortared stonework around churchyards, especially under the coping stones of boundary walls.

Cylisticus convexus has been recorded from several open and exposed churchyards particularly in the east of the county. *Platyarthrus hoffmannseggi* is also common, along with its ant host, in short turf in churchyards. This species is usually found beneath the stone vases in which ants often make their nests. *Trichoniscoides sarsi* is a synanthropic species that has been recorded from two churchyards and may be present in many more but due to its small size and soil-dwelling life-style it is probably being over-looked.

Dairy farms and stables

This is an important habitat for several synanthropic species (*Porcellio dilatatus* and *Porcellionides pruinosus*) which are associated with buildings that house livestock, the animal waste providing the woodlice with food, shelter and moisture. From this habitat *P pruinosus* has been introduced onto many allotments across the county with the tons of manure that are delivered to them annually. From allotments, this species has spread into many of the surrounding habitats. There are fourteen species recorded from this habitat with *P spinicornis* being recorded from mortared walls and both species of *Haplophthalmus* (*danicus* and *mengei*) being occasionally found in association with dung heaps and farm waste. *C convexus* is another species that is occasionally found around farmyards usually beneath stones and other farm paraphernalia.

Quarries

There are thirteen species recorded from this habitat with *Trachelipus rathkei* (which is on the north-west limit of its range in Leicestershire) being found in several of the disused ironstone quarries in the east of the county. *P spinicornis* and *C convexus* are also recorded from ironstone and limestone quarries in the south-east of the county with the latter species not being confined to lime-rich areas.

River valleys and wetlands

The two notable species for these habitats in Leicestershire are *Ligium hypnorum* and *T rathkei*. The former is restricted to one site in the county where it is found around a large lake and surrounding ditch system. *T rathkei* has been found in rough grassland and in *Glyceria* leaf-litter surrounding a pond in the Welland valley.

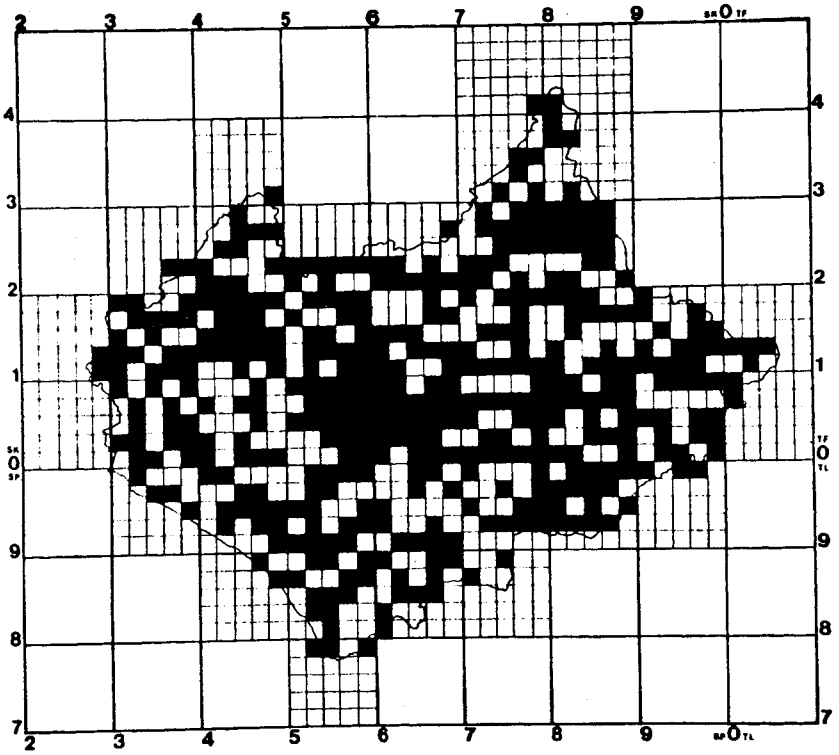
Wasteground

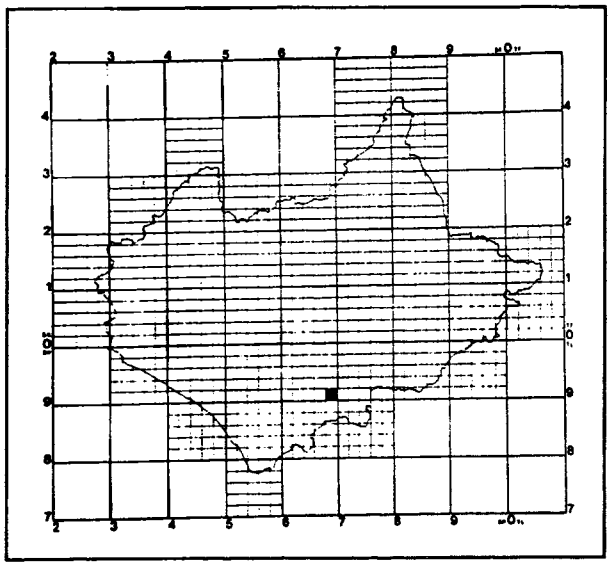
Within Leicester the urban wasteground woodlouse fauna consists of thirteen species. *Armadillidium nasatum* is the most notable species found in this habitat with some large populations thriving on derelict industrial sites. *H danicus* and *H mengei* also turn up regularly on these sites beneath embedded stones and pieces of wood. In the county, *A nasatum* has been found on the embankments of disused railway lines and *C convexus* was discovered beneath a sleeper at an abandoned coal pit.

DISTRIBUTION MAPS

Each species' distribution has been mapped on a tetrad basis (2x2km squares) and is accompanied by a brief description of its favoured habitats within the county. The map below shows all the tetrads in which at least one species of woodlouse has been recorded over the last three decades. This wide coverage is partly due to my visiting 99% of the churchyards within the county, then trying to fill in any gaps for the less common species (*P dilatatus* and *P pruinosus*) by visiting a scattering of dairy farms and stables across the county.

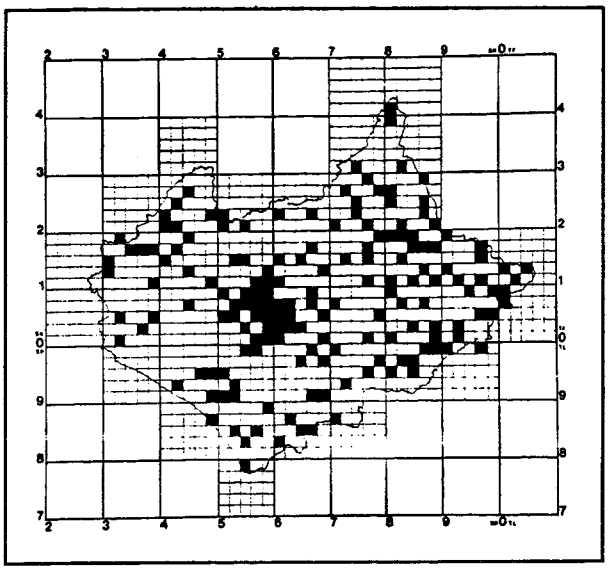
Figure 1. Woodlouse records in Leicestershire





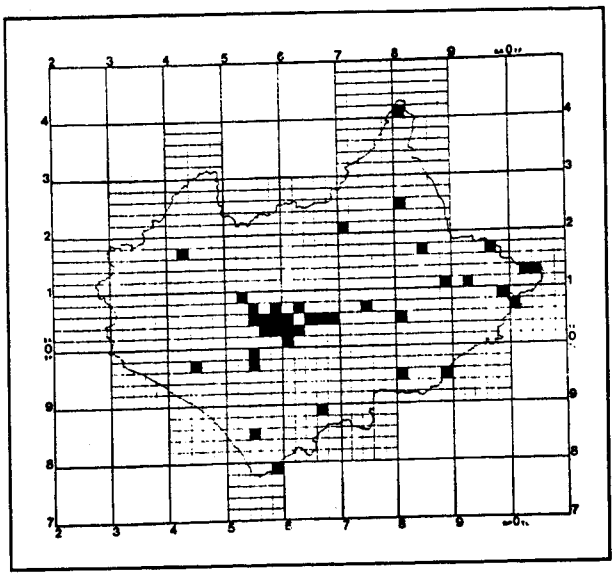
LIGIUM HYPNORUM
(Cuvier, 1792)

This species (9mm), which moves rapidly when disturbed, resembles a dark, poorly patterned specimen of *Philoscia muscorum* but they are easily separated by the number of segments on the flagellum. *L hypnorum* has more than ten while *P muscorum* has only three. The first records of *L hypnorum* for the county were from a ruined summer house and two ditches adjacent to the lake in the grounds of Gumley Hall on 6.vi.81 (Rundle, 1960-1989). This species was re-found there, in good numbers, in the marsh at the inflow to the lake by Derek Lott and myself on 6.v.93. The species is a relict of the ancient oak woods and fens that once covered southern Britain with Leicestershire being on the north-western limit of the species' known range. The woodland at Gumley Hall is believed to be a remnant of ancient woodland.



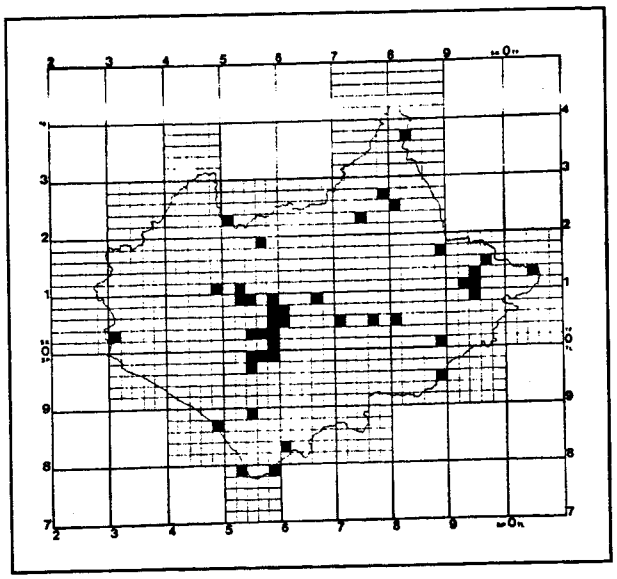
ANDRONISCUS DENTIGER
(Verhoeff, 1908)

A white to rose-red woodlouse (6mm) with two yellow stripes running down its back either side of the mid-point. A central black line is, in fact, its gut contents showing through the skin. This species has been found in small numbers around the county, mainly in synanthropic sites such as churchyards, gardens and old quarries. *A dentiger* has a preference for damp situations, such as drains, and has even been recorded completely submerged in a stream on Evington Golf Course, Leicester. Michael Evans (1982) found the species to be widespread and common in south and east Leicestershire but, probably due to drought during in his survey, failed to find it in the north-west.



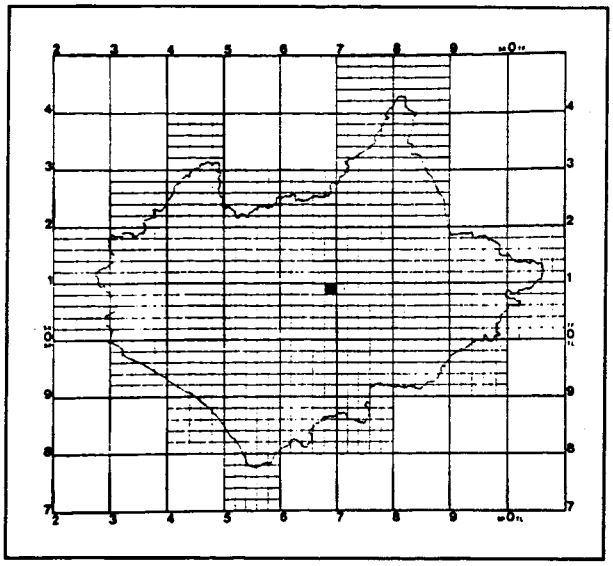
HAPLOPHTHALMUS DANICUS
(Budde-Lund, 1880)

A white to pale-cream woodlouse (4mm) with rows of shallow longitudinal ridges down its back. This species is very similar to *Haplophthalmus mengei* but differs in that it lacks the two prominent projections on the dorsal surface of its pleon. This is a soil-dwelling woodlouse that can be found by pulling up embedded stones or slabs and is sometimes found in large numbers under rotting wood. When this species is discovered, it either moves very slowly or feigns death. In Leicestershire *H danicus* has been found in good numbers in wet woodlands as well as synanthropic sites such as cemeteries, farms and public parks. Michael Evans (1982) thought this species to be rare, either recorded from well-rotted wood or damp ditches.



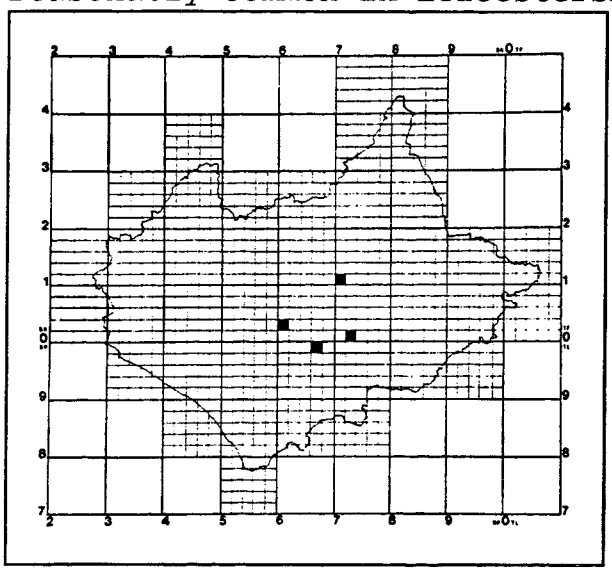
HAPLOPHTHALMUS MENGEI
(Zaddach, 1844)

Another white to pale-cream species (4mm) with rows of small longitudinal ridges down its back but with two prominent projections on the dorsal surface of its pleon. *H mengei* has the similar, scattered distribution of *H danicus* in whose company it can occasionally be found. A third species of *Haplophthalmus* (*montivagus*) was discovered in Britain in 1987 (Hopkins, 1992) but so far has not been discovered in Leicestershire. This new species, which is almost identical to *H mengei* (being separated by genitalia examination), seems to have a preference for ancient woodland on calcareous soils and may yet lie undiscovered in the east of the county.



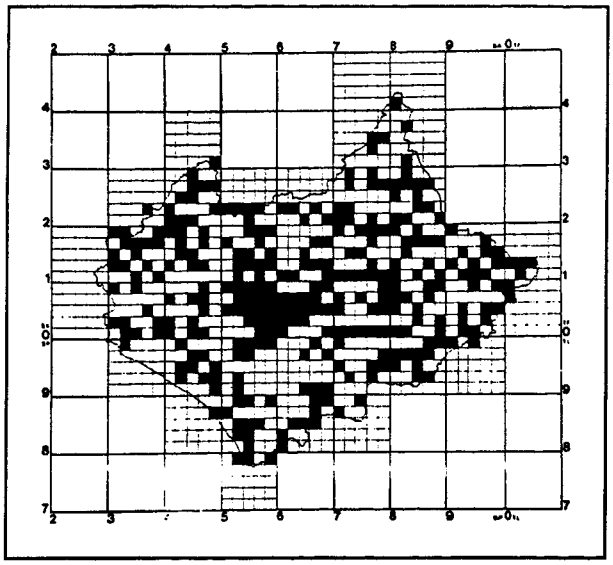
TRICHONISCOIDES ALBIDUS
(Budde-Lund, 1880)

This species (4mm), which resembles a dull, purple-red coloured *Trichoniscus pusillus*, is a soil-dwelling woodlouse of very damp situations such as damp hollows, flushes and the margins of water courses. The best method for finding this species is to look on the underside of embedded bricks and stones prised from the sides of streams and ditches after a period of wet weather, when this species moves closer to the surface. It was first recorded from the grounds of Baggrave Hall on 24.x.93 discovered beneath a brick which was buried under a large piece of concrete on the edge of a stream. A second specimen was obtained from a nearby brick-lined ditch. Although these are the only records so far, further survey work may prove the species to be reasonably common in Leicestershire.



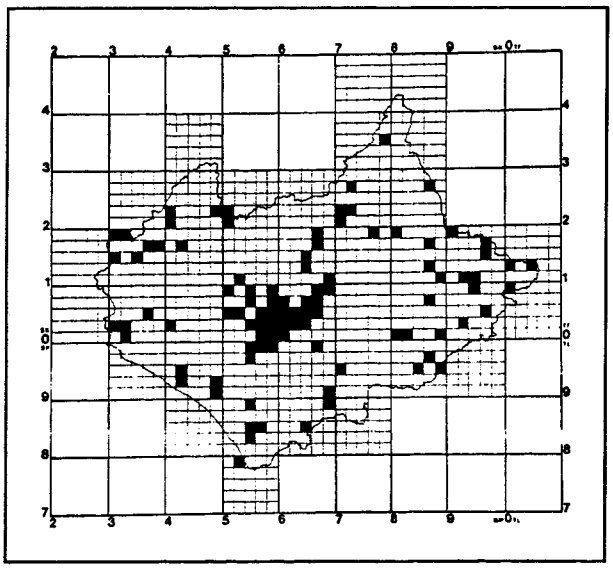
TRICHONISCOIDES SARSI
(Patience, 1908)

A small (4mm) white woodlouse flushed pale pink with the eyes each consisting of a single red ocellus. The first county record came from beneath stones, adjacent to the outflow of the fishing lake at Rolleston Hall (26.ix.87) with a second from the back garden of a large Victorian house on London Road, Leicester (27.ix.89) (Rundle, 1987-1990). More recently, it has been found along the banks of a stream bordered by gardens in south-west Leicester and in two churchyards in the county (Burton Overy and Ashby Folville). As with all small, soil-dwelling woodlice this species is often easier to collect during the cooler and damper times of the year when the soil moisture levels bring it closer to the surface. A second species, *T helveticus*, has recently been discovered (during male genitalia examination) in an isopod collection under the name of *T sarsi* during research for a new book (Hopkin, 1992). Females are indistinguishable from one another. On present knowledge, the true *T sarsi* has only been found in synanthropic habitats in Dublin, Kent, Oxford and Leicestershire, with the newer species having been found in ancient woodland and chalk grasslands in southern England.



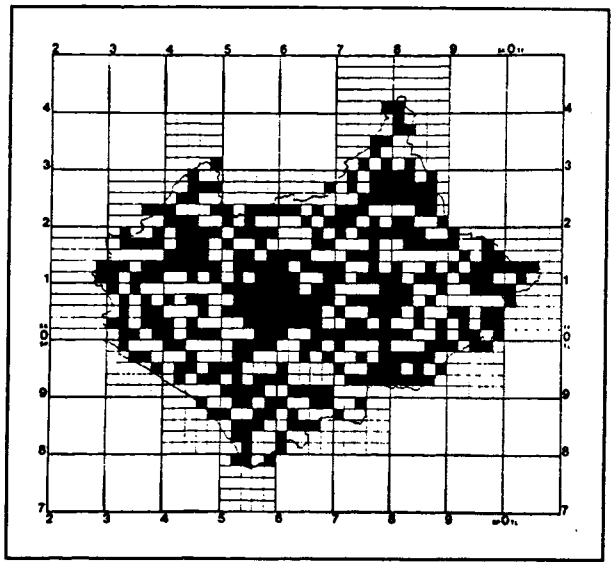
TRICHONISCUS PUSILLUS
(Brandt, 1833)

This small (5mm) reddish-brown woodlouse is one of the most common species in Britain with densities of up to several hundred per square metre in favoured habitats. Its small size has often lead to it being over-looked or mistaken for the young of larger species. Michael Evans (1982) summed up this species' Leicestershire distribution very well when he wrote "ubiquitous, though strongly affected by drought" when it can be hard to find. Occasionally purple-coloured specimens of this species are found. The colouration is due to the woodlouse being infected with an iridovirus (which is not confined to this woodlouse species) and is not thought to cause distress to the affected woodlouse.



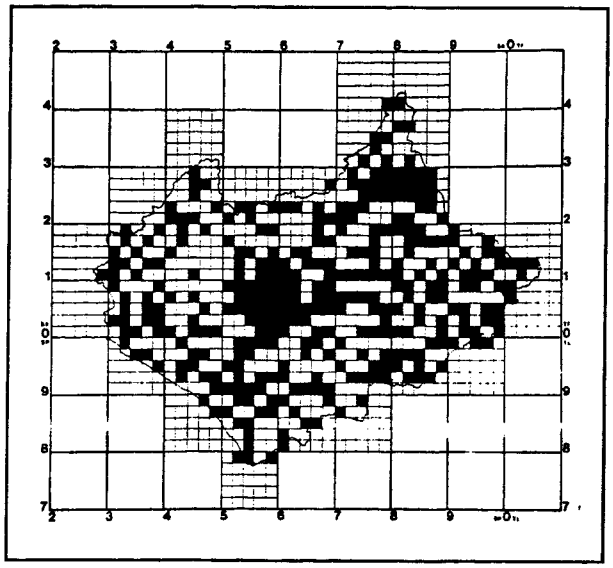
TRICHONISCUS PYGMAEUS
(Sars, 1899)

A very small (2.5mm) version of *T pusillus* which lacks much body pigment and usually has a white head. This species can be separated from juvenile *T pusillus* by looking at its eyes which are composed of three ocelli. If the specimen is under 2.5mm in length and its three ocelli are touching each other, then it is *T pygmaeus*. Michael Evans (1982) though this species to be rare in the county when he mainly collected it by sieving woodland leaf litter. Both Rundle (1987-1990) and myself have recorded this species in small numbers from across the county from a wide range of habitats including churchyards, gardens and woodland, but we both would admit that it is largely under-recorded.



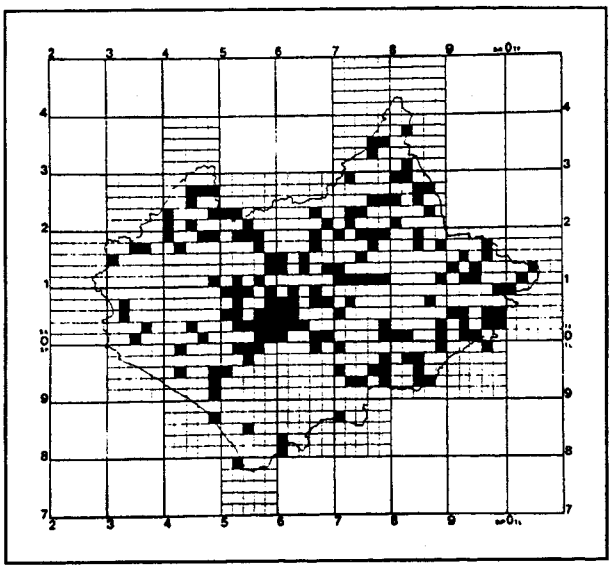
ONISCUS ASELLUS
(Linnaeus, 1758)

This is a shiny grey woodlouse (16mm) usually with two rows of yellow blotches down its back and three segments to the flagellum. Immature specimens have a characteristic light brown patch on the first two segments of their pleon so that even very small *O asellus* can be separated from immature *Porcellio scaber* in the field. This is one of the most common woodlice in Britain, found in all habitats, with a preference for slightly damper situations than *P scaber*. *O asellus* has also been identified from mineralised woodlice remains taken from several archaeological digs in Leicester during the 1990s. These specimens came from the Roman and Medieval periods (Daws, 1993). At one point it was thought that there were two species of *Oniscus* in Britain, separated by genitalia, but many intermediates are found as one moves north from the south west coast. It is now believed that during the Ice Age, *O asellus* managed to survive in what is now the south coast and as the ice retreated and melted, these were separated by rising sea levels from their European relatives. This separation resulted in several thousand years of independent evolution, the European sub-species being reintroduced as man recolonised the British Isles.



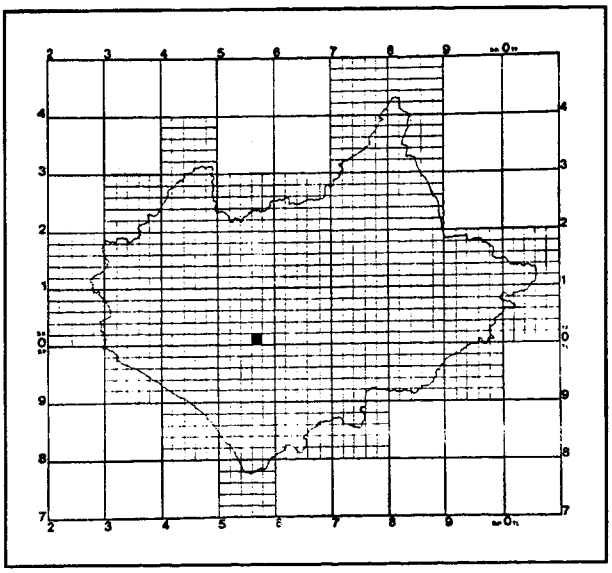
PHILOSCIA MUSCORUM
(Scopoli, 1763)

This is a very fast, shiny woodlouse (11mm) with a dark stripe down the centre of its back, which varies in colour from bright yellow through red to the usual dark mottled brown. This is the dominant species of grassland and hedgerows which can also be found in gardens and woodland. The map shows a widespread distribution and I see no reason why it should not be recorded in all Leicestershire tetrads. The mineralised remains of a single specimen of this species was recorded from a third century AD Roman dung pit unearthed during an archaeological dig in the centre of Leicester in 1991 (Daws, 1994).



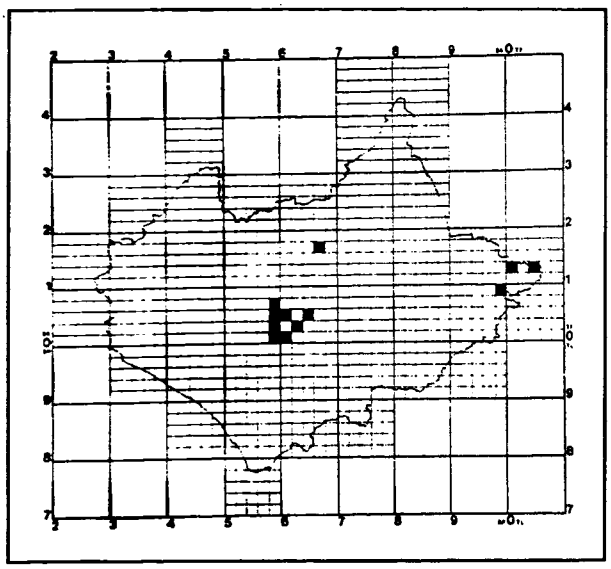
PLATYARTHRUS HOFFMANNSEGGI
(Brandt, 1833)

This blind, white woodlouse (4mm) lives in the nests of ants, which leave it to roam around at will. However, if the woodlouse is attacked it clamps it flat oval-shaped body - which does not give much purchase - to the substrate and waits for its attacker to go away. This woodlouse is attracted to ant nests by their smell, laboratory experiments having shown that the species follows formic acid trails. Once in the nest it is probably tolerated because it helps to keep the nest clean by eating the regurgitated pellets of its hosts. I usually find this species in the company of black and yellow ants but seldom with the more aggressive red ants. In common with its host, the ant, this species is found in fairly open habitats including churchyards, gardens, undisturbed wasteground and grassland. Michael Evans (1982) found it to be common under vases in churchyards from where the majority of his records came.



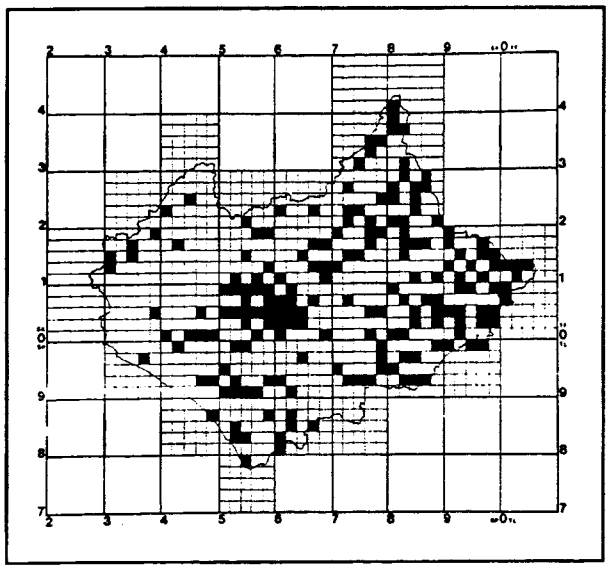
ARMADILLIDIUM DEPRESSUM
(Brandt, 1833)

This large (20mm), robust woodlouse, slate-grey in colour, is on the north-eastern edge of its range in Leicestershire. It was discovered to be common amongst the ivy on the mortared walls surrounding a small graveyard at Aylestone, south Leicester (2.x.87)(Rundle, 1987-1990). I have visited this site on several occasions when *A depressum* was found in varying numbers depending on the temperature and the amount of recent rainfall. This species can survive drought and long, hot or cold spells by retreating into a network of tunnels it excavates for this purpose.



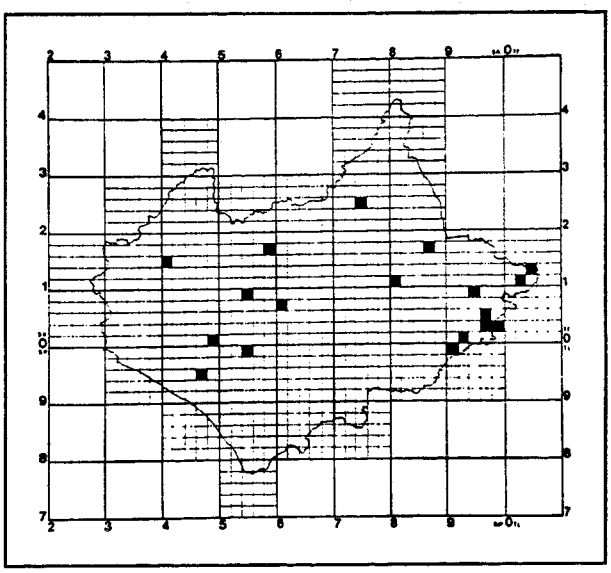
ARMADILLIDIUM NASATUM
(Budde-Lund, 1885)

This species (20mm) is reasonably easy to separate from other pill woodlice because of the presence of a square projection (forming a small horn) on the plate forming its forehead between its antennae. Leicestershire records come from synanthropic sites, including the depots of several city parks (such as Abbey, Evington, Humberstone), wasteground (the most noteworthy of which is the site of the old power station at Rawdykes, Leicester where *A nasatum* can be found in good numbers with *Armadillidium vulgare*) and horticultural nurseries (such as the one at Rotherby and Cole's in Thurnby). This species has been known as a glasshouse pest for many years (Harding & Sutton, 1985) and has probably been transported around the county along with containerised plants for many years. In southern Britain, *A nasatum* can be found in quarries and I have recorded it from roadwork stores in Gloucestershire. This may be another way this species moves around the country along with rock and roadstone. The species was first recorded in Leicestershire by Rundle (1960-1987) on 18.ix.82 when it was found at Tickencote Park and in the ruins of an old barn adjacent to Turnpole Wood in Rutland.



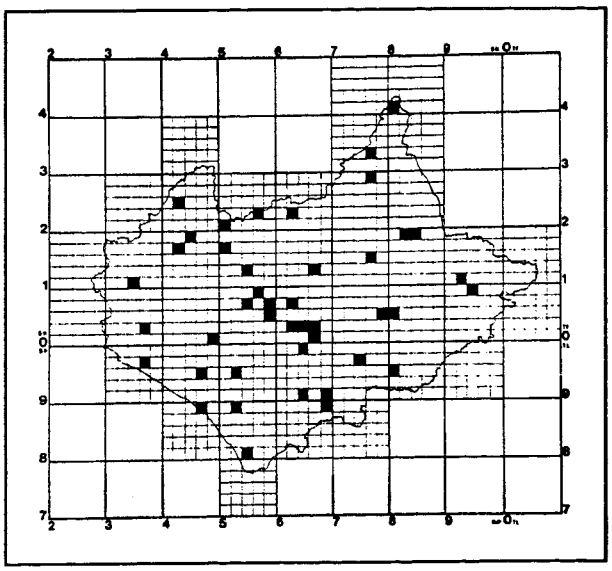
ARMADILLIDIUM VULGARE
(Latreille, 1804)

This species (18mm), which can roll into a complete ball, is the most common pill woodlouse to be found in Leicestershire. It has a preference for open, dry habitats and has been recorded from wasteground, churchyards, quarries, limestone grassland and heath which receive plenty of direct sunlight. It is more common on the east Leicestershire limestone than in the west of the county. *A vulgare* has been recorded from archaeological digs during the early 1990s in Leicester when it was found in dung and rubbish pits from the Medieval period (Daws, 1993).



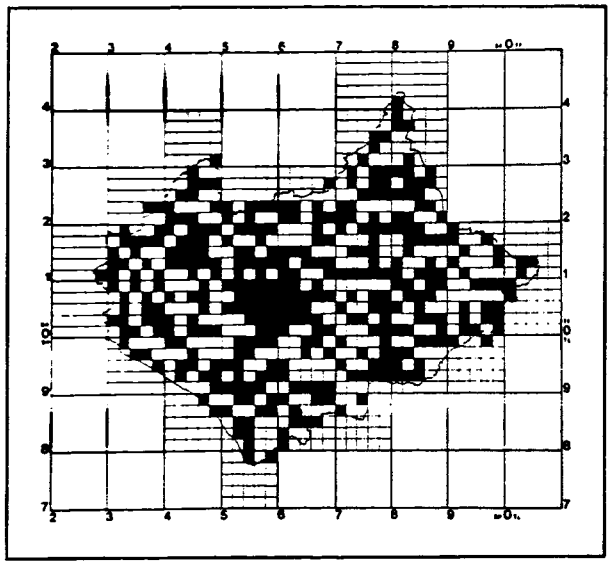
CYLISTICUS CONVEXUS
(De Geer, 1778)

At first sight this concave woodlouse (15mm) is similar to an *Armadillidium* species but, although it can roll into a complete ball, its antennae and pleopods protrude. It was first recorded for the county from a churchyard at Anstey (18.ix.82)(Evans, 1982). Since then it has been found at a number of sites across the county including churchyards, quarries, farms and wasteground. All of these sites are open and synanthropic with at least a little disturbance. This species has the ability to get into these recently disturbed sites and breed quite happily for a number of years before declining with the succession of rank vegetation.



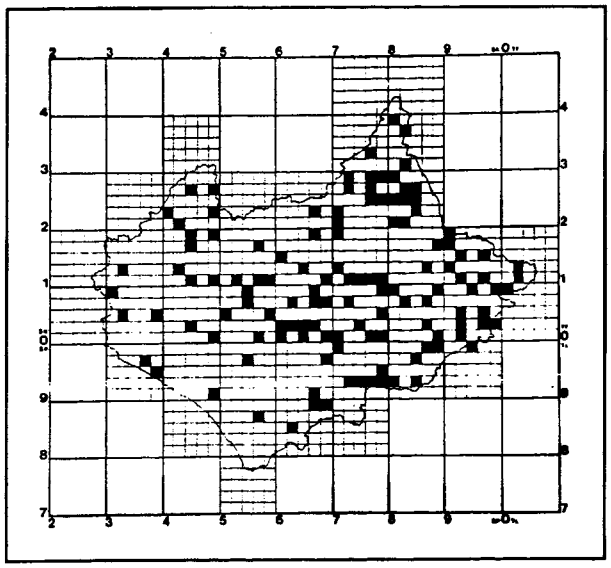
PORCELLIO DILATATUS
(Brandt, 1833)

A large (15mm) rounded woodlouse which is a characteristically dull, uniform, greyish-brown colour, that once seen can be readily identified in the field. The other notable character is the rounded tip to the telson. The species is most common on farms with dairy herds or at stables which have old brick outbuildings and plenty of straw and dung around. This habitat of dung and mortared walls provides food and shelter as well as a source of lime from which to make their exo-skeletons. The only sites in Leicestershire away from farms and stables where I have recorded this species, are two depots on Abbey Park and a churchyard at Woodhouse. The former site contained mortared walls and animal dung with the latter record coming from beneath dustbins adjacent to the churchyard wall. Michael Evans' (1982) knowledge of this species is interesting as he wrote "very rare, one record from Leicester" when he quotes an old record for allotments (now a school playing field) near Belgrave. There are also several mineralised specimens of this species from archaeological digs from Leicester city centre in the early 1990s when it was found in dung and rubbish pits from the Medieval period (pre 1100 AD) (Daws, 1993).



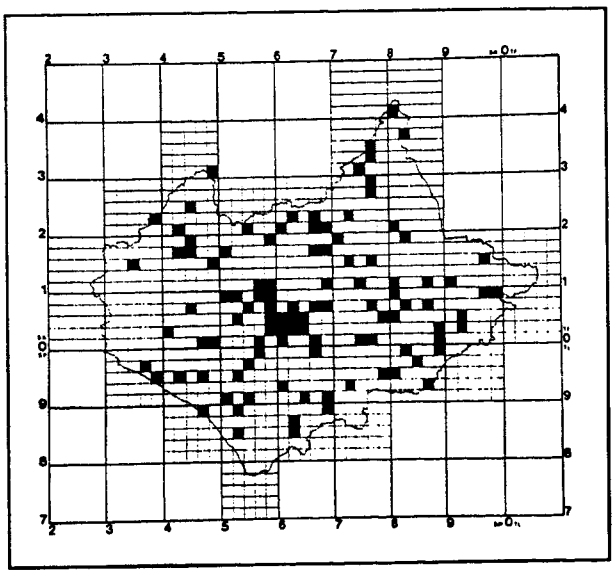
PORCELLIO SCABER
(Latreille, 1804)

This woodlouse (17mm) is one of the most common in Britain which varies in colour from whitish through cream and reds to the usual dark grey. A good field character is the orange colour of the basal segment of the antennae and the two sections to the flagellum. This species can be found in almost all habitats from gardens to woodland, with a preference for slightly drier micro-sites than *O asellus*. It is also the woodlouse most likely to enter houses and was the most common species found in material from the Leicester archaeological digs in both the Roman period (50 AD) and late Medieval period (pre 1400 AD)(Daws, 1993).



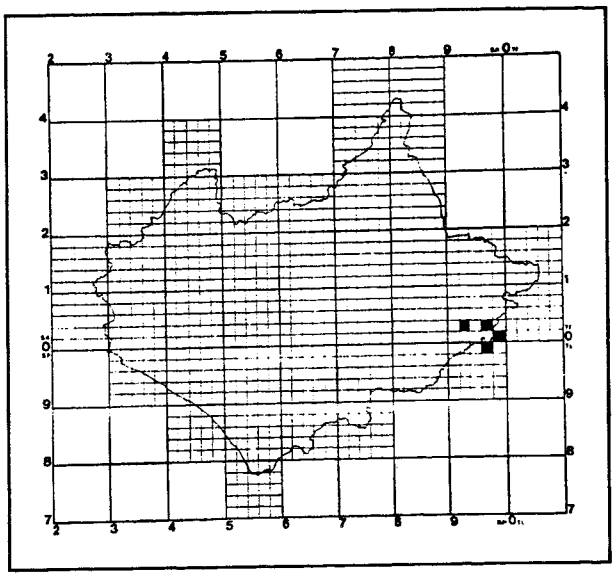
PORCELLIO SPINICORNIS
(Say, 1818)

A colourful woodlouse (12mm) with two rows of yellow blotches down its back and a characteristic black head. This species is found in lime-rich habitats, such as ironstone and limestone quarries in the east of the county (e.g. Ketton, Clipsham Big Pits, Bloody Oaks and Geeston) as well as on the dry limestone walls in this area. Elsewhere in the county it is confined to buildings and walls with lime-rich mortar between their stonework. Michael Evans (1982) found this species to be "rare and synanthropic" in his survey of churchyards during the early 1980s but recent re-surveys of these churches have revealed the presence of *P spinicornis* in many of them. Even more recently I have conducted torchlight surveys of built-up areas of Leicester but this had only limited success and I am surprised that this species is not more common in this habitat.



PORCELLIONIDES PRUINOSUS
(Brandt, 1833)

This species (12mm) is a greyish-purple colour with a dusty purple bloom (made from minute flakes of dried skin) and conspicuous white legs. Evans (1982) found this species to be "widespread and fairly common, being frequently recorded from old manure heaps". I have also found this species to be common at farms with livestock as well as at stables. It has also been introduced into the city with the manure delivered to allotments and private gardens from where the species has spread into adjacent habitats. Although primarily synanthropic, and probably introduced into Britain by the Romans, it has recently been found amongst sedge rhizomes in fen habitat at Lockington Marsh and in woodland leaf litter at Narborough Bog being introduced into these sites with bales of straw and manure respectively. This species may have been more common at the start of this century before the motorcar replaced the horse as a means of transport with a resultant decline in stables and their dung heaps.



TRACHELIPUS RATHKEI
(Brandt, 1833)

A shiny, grey-brown woodlouse (15mm) with regular light longitudinal patterning down its back and five pairs of pleopodal lungs. These lungs are situated on the underside of the pleon and show up as a row of white patches on the sides of the genitalia. This species is on the edge of its north-western range in south-east Leicestershire where in the early 1980s it was recorded from Tixover churchyard (in the Welland flood plain) and Morcott Gulley (disused iron-stone quarry)(Evans, 1982). With these records in mind, I recently followed the Welland downstream from Tixover and found this species in rough grassland near Duddington where the A47 crosses the Welland. It was also found in another ironstone quarry at Tixover Grange. The above records fit well into the national pattern of the known habitat preferences of this species i.e. for wet grassland and disused ironstone workings (Harding & Sutton, 1985).

REFERENCES

BOYER, P (1990). *The Analysis of Environmental Samples from a Cess-pit from Leicester*. Unpublished MA Dissertation, Dept of Archaeology, University of Leicester.

DAWS, J (1993). *Report on the Mineralised Woodlice from the Causeway Lane Dig, Leicester of 1991*. Unpublished manuscript, Leicestershire Museums Service.

DAWS, J (1994). *Report on the Mineralised Woodlice from the High Street Cellars Dig, Leicester of 1991*. Unpublished manuscript, Leicestershire Museums Service.

EVANS, M (1982). *Report on the Distribution of Woodlice in Leicestershire*. Unpublished manuscript, Leicestershire Museums Service.

HARDING, PT & SUTTON, SL (1985). *Woodlice in Britain and Ireland: Distribution and Habitat*. Institute of Terrestrial Ecology.

HOPKIN, SP (1992). *A Key to the Woodlice of Britain and Ireland*. Aidgap key, Field Studies Council.

RUNDLE, AJ (1960-1989). *Reports on Visits by Members of the Conchological Society to Leicestershire*. Unpublished manuscripts, Leicestershire Museums Service.

RUNDLE, AJ (1987-1990). *Leicestershire (Non-insect) Invertebrate Survey*. Unpublished manuscripts, Leicestershire Museum Services.